

MAINTENANCE SUMMARY FORM - 11203

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: GAC Tanks 1, 2, 3, 4, 5
2. MANUFACTURER: TIGG Corporation
3. EQUIPMENT/TAG NUMBER(S): 50M1301, 50M1302, 50M1303, 50M1304, 50M1305
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): 55,834.52 lbs. (complete with water and carbon)
5. NAMEPLATE DATA (hp, voltage, speed, etc.): Vessel MAWP 80 PSI at 140° F, MDMT - 20° F at 150 PSI
6. MANUFACTURER'S LOCAL REPRESENTATIVE: TIGG Corporation
 - a. Name: Bill Bland Telephone: 412-257-9580, ext. 107
 - b. Address: 800 Old Pond Rd. #706, Bridgeville, PA 15017

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
Internal inspection of a vessel	Each time carbon is removed	
Inspect the lining to verify no damage	Each time carbon is removed	
Inspect the underdrain laterals in the collector to ensure they are intact and not plugged.	Each time carbon is removed	
Check pressure gauges	Quarterly	
Inspection of piping and valves for signs of wear and/or leakage	Quarterly	

8. LUBRICANT LIST – N/A

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY: **11203 1.04.C.3, 1.04.C.4**

Part No.	Description	Unit	Quantity	Unit Cost
1	Underdrain Nozzles with Washers	Each	5	25.00
2	80 PSI Rupture Disks	Each	5	150.00
3	Manway Gaskets 14x18 Elliptical Top	Each	5	400.00
4	Manway Gaskets 24" Side Manway	Each	5	610.00
Note: Identify parts provided by this Contract with two asterisks.				

CONTRACT: W912DQ-04-D-0017
WYCKOFF REPLACE GROUNDWATER TREATMENT PLANT

THE FOLLOWING IS SUBMITTED FOR APPROVAL:

11235: TANK MIXER
1.04.B: MAINTENANCE SUMMARY FORM

Holmes Mechanical Submittal Approval

I hereby certified that the (material) (equipment) (article) shown and marked in this submittal and proposed to be incorporated with Contract No. W912DQ-04-D-0017, and has been reviewed and approved for conformance with the contract drawings and specifications.

Certified by Submittal Reviewer Kirk Payne Date 1-30-08

MAINTENANCE SUMMARY FORM – 11235 1.04.B

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: Digested Sludge Mixers 1 & 2
2. MANUFACTURER: Neptune C-2.0
3. EQUIPMENT/TAG NUMBER(S): 40M1431, 40M1432
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) : N/A
5. NAMEPLATE DATA (hp, voltage, speed, etc.): ½ HP., 115/230V, 1PH., 1800 RPM
6. MANUFACTURER'S LOCAL REPRESENTATIVE: APSCO Inc.
 - a. Name: Elaine Stone Telephone: 425-822-3335
 - b. Address: PO Box 2639, Kirkland, WA 98083

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
Check motor housing screws, clamp screw and shaft collar set screw.	After first 10 days of operation, monthly after that.	
Upper ball bearing	Re-grease as needed	■

8. LUBRICANT LIST

[illegible]

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part No.	Description	Unit	Quantity	Unit Cost
100395	Ball Bearing	Each	1	
100362	Inner race and needle bearing	Each	1	
100363	Oil Seal	Each	1	
100369	Washer spherical set	Each	1	

Note: Identify parts provided by this Contract with two asterisks.

MAINTENANCE SUMMARY FORM 11240

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: Froth Feed Pump 1 and 2

2. MANUFACTURER: Milton Roy, Mil Royal CMCH 561

3. EQUIPMENT/TAG NUMBER(S): 50P1251, 50P1252

4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): 1225 LBS.

5. NAMEPLATE DATA (hp, voltage, speed, etc.): 2HP, 460V, 3 PH, 1725 RPM, 1.15 Service Factor

6. MANUFACTURER'S LOCAL REPRESENTATIVE: Fine Line Instrument

a. Name: _____ Telephone: 425-861-1110

b. Address: 17371 NE 67th Court, Suite B3, Redmond, WA 98052

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
Check Drive Gear Oil Level	Monthly, add as needed	• AGMA #7 Comp.
Change gear drive lubricant and clean magnetic filter below crosshead chamber	Every 6 months or 2500 service hours whichever occurs first. Recommended after initial 90 days in service.	• AGMA #7 Comp
Lubricate drive motor	Annually	• AGMA #7 Comp.
Check valves self cleaning pump hot detergent solution for 15 minutes, follow with water flushing.	As needed	
Supply tank & piping clean & flush	Annually	
Suction line strainer cleaning	As required or needed	

Ball check valves, flush with clean liquid	As often as necessary for accurate metering.	
HPD Liquid End Displacement Chamber	Every 6 months, 2500 service hours	* Zurnpreen 15 A

8. LUBRICANT LIST

[illegible]

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

[illegible]

MAINTENANCE SUMMARY FORM – 11305

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: Sump Pumps No. 1 and 2 Model NP3102X-643
2. MANUFACTURER: ITT FLYGT
3. EQUIPMENT/TAG NUMBER(S) : 40P1501 and 40P1502
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) : 230
5. NAMEPLATE DATA (hp, voltage, speed, etc.): 5HP, 460V, 3PH
6. MANUFACTURER'S LOCAL REPRESENTATIVE: Whitney Equipment CO.
 - a. Name: BILL CARLSON Telephone: 425-486-9499
 - b. Address: 21222 - 30th DR. SE, SUITE 110, BOTHELL, WA 98021

7. MAINTENANCE REQUIREMENTS –

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. If training is required, it can be provided by the manufacturer/representative. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
Inspect visible parts on pump, pump casing and impeller for wear	Annually	n/a
Check lubricant/coolant level and condition, change as necessary	Annually	Mobil Whiterex 309
Check cables and cable entry for wear and tightness	Annually	n/a
Inspect pump voltage draw and meggar readings	Monthly	n/a
Check function of level sensors, starter and monitoring equipment	Annually	n/a
Check rotation direction of pump	When reconnecting	n/a
Check pipes, valves peripheral equipment	Annually	N/A
Check cooling system	Annually	N/A

8. LUBRICANT LIST: See listed above

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part No.	Description	Unit	Quantity	Unit Cost
592 01 103	Inner Mechanical Seal			245.00
592 01 04	Outer Mechanical Seal			320.00
80 32 32	O-ring kit			65.00
83 15 73	Upper Bearing			21.00
83 36 90	Lower Bearing			48.00

MAINTENANCE SUMMARY FORM - 11312

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: BACKWASH PUMPS 1 & 2, TYPE 811-4x3-10
2. MANUFACTURER: GRISWOLD
3. EQUIPMENT/TAG NUMBER(S): 50P1351 & 50P1352
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): 814 LBS.
5. NAMEPLATE DATA (hp, voltage, speed, etc.): 15 HP, 460V, 3 PH, 1800 RPM, 1.15 Service Factor
6. MANUFACTURER'S LOCAL REPRESENTATIVE: Cascade Machinery & Electric, Inc.
 - a. Name: _____ Telephone: 206-762-0500
 - b. Address: 4600 East Marginal Way South, PO Box 3575 Seattle, WA 98124

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

*NOTE: Maintenance and monitoring intervals should be shortened in severe service locations

Maintenance Operation Comments	Frequency*	Lubricant (If Applicable)
Bearing and Lubricant Condition: bearing temperatures, lubricant level, and vibration. Oil level should be mid-point of the bulls eye sight glass. Lubricant should be clear with no signs of frothing.	Routinely	★
Shaft seal condition: Mechanical seals should show no signs of leakage	Routinely	
Overall pump vibration, check bearing alignment	Routinely	
Pump discharge pressure – a gradual decrease in developed head can indicate the need for Impeller adjustment	Annually	
Check foundation and hold down bolts	Quarterly	

Oil change	Quarterly or after 2000 hrs. of operation, which ever comes first.	✦
Shaft alignment	Quarterly	
Pump flow rate	Annually	
Motor Amp Drain	Annually	
Vibration signature	Annually	
Motor Lubrication	20,000 hrs. of service	✧

8. LUBRICANT LIST

Reference Symbol	MFR (Name)	MFR (Name)	MFR (Name)	MFR (Name)	Or Equal
✦	ISO Grade VG 68 or equal	Chevron GTS Oil 68	Exxon Terrestic 68 or Nuto 68	Mobil DTE Heavy-Medium	Philips Mangus 315
✦	Shell Tellus Oil 68	Sunoco Sunvis 968	Amoco Industrial 68	Royal Purple – Synfilm GT VG 68	
✧	PolyRex EM Grease ESSO/EXXON				

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

[illegible]

MAINTENANCE SUMMARY FORM - 11312

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: BACKWASH RECYCLE PUMP 1, TYPE 811- 3 x 2-6
2. MANUFACTURER: GRISWOLD
3. EQUIPMENT/TAG NUMBER(S): 50P1461
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) : 240 LBS.
5. NAMEPLATE DATA (hp, voltage, speed, etc.): 2 HP, 460V, 3 PH, 1800 RPM, 1.15 Service Factor
6. MANUFACTURER'S LOCAL REPRESENTATIVE: Cascade Machinery & Electric, Inc.
 - a. Name: _____ Telephone: 206-762-0500
 - b. Address: 4600 East Marginal Way South, PO Box 3575 Seattle, WA 98124

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

*NOTE: Maintenance and monitoring intervals should be shortened in severe service locations

Maintenance Operation Comments	Frequency*	Lubricant (If Applicable)
Bearing and Lubricant Condition: bearing temperatures, lubricant level, and vibration. Oil level should be mid-point of the bulls eye sight glass. Lubricant should be clear with no signs of frothing.	Routinely	★
Shaft seal condition: Mechanical seals should show no signs of leakage	Routinely	
Overall pump vibration, check bearing alignment	Routinely	
Pump discharge pressure – a gradual decrease in developed head can indicate the need for Impeller adjustment	Annually	
Check foundation and hold down bolts	Quarterly	

Oil change	Quarterly or after 2000 hrs. of operation, which ever comes first.	✦
Shaft alignment	Quarterly	
Pump flow rate	Annually	
Motor Amp Drain	Annually	
Vibration signature	Annually	
Motor Lubrication	20,000 hrs. of service	✧

8. LUBRICANT LIST

Reference Symbol	MFR (Name)	MFR (Name)	MFR (Name)	MFR (Name)	Or Equal
✦	ISO Grade VG 68 or equal	Chevron GTS Oil 68	Exxon Terrestic 68 or Nuto 68	Mobil DTE Heavy-Medium	Philips Mangus 315
✦	Shell Tellus Oil 68	Sunoco Sunvis 968	Amoco Industrial 68	Royal Purple – Synfilm GT VG 68	
✧	PolyRex EM Grease ESSO/EXXON				

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

[illegible]

MAINTENANCE SUMMARY FORM - 11312

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: DECANT PUMPS 1 & 2, TYPE 811LF- 1.5 x 1-8
2. MANUFACTURER: GRISWOLD
3. EQUIPMENT/TAG NUMBER(S): 50P1391 & 50P1392
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): 232 LBS.
5. NAMEPLATE DATA (hp, voltage, speed, etc.): .75 HP, 460V, 3 PH, 1800 RPM, 1.15 Service Factor
6. MANUFACTURER'S LOCAL REPRESENTATIVE: Cascade Machinery & Electric, Inc.
 - a. Name: _____ Telephone: 206-762-0500
 - b. Address: 4600 East Marginal Way South, PO Box 3575 Seattle, WA 98124

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

*NOTE: Maintenance and monitoring intervals should be shortened in severe service locations

Maintenance Operation Comments	Frequency*	Lubricant (If Applicable)
Bearing and Lubricant Condition: bearing temperatures, lubricant level, and vibration. Oil level should be mid-point of the bulls eye sight glass. Lubricant should be clear with no signs of frothing.	Routinely	★
Shaft seal condition: Mechanical seals should show no signs of leakage	Routinely	
Overall pump vibration, check bearing alignment	Routinely	
Pump discharge pressure – a gradual decrease in developed head can indicate the need for Impeller adjustment	Annually	
Check foundation and hold down bolts	Quarterly	

Oil change	Quarterly or after 2000 hrs. of operation, which ever comes first.	✦
Shaft alignment	Quarterly	
Pump flow rate	Annually	
Motor Amp Drain	Annually	
Vibration signature	Annually	
Motor Lubrication	20,000 hrs. of service	✧

8. LUBRICANT LIST

Reference Symbol	MFR (Name)	MFR (Name)	MFR (Name)	MFR (Name)	Or Equal
✦	ISO Grade VG 68 or equal	Chevron GTS Oil 68	Exxon Terrestic 68 or Nuto 68	Mobil DTE Heavy-Medium	Philips Mangus 315
✦	Shell Tellus Oil 68	Sunoco Sunvis 968	Amoco Industrial 68	Royal Purple – Synfilm GT VG 68	
✧	PolyRex EM Grease ESSO/EXXON				

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

[illegible]

MAINTENANCE SUMMARY FORM - 11312

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: FILTER FEED PUMPS 811S 1.5 x 1.8
2. MANUFACTURER: GRISWOLD
3. EQUIPMENT/TAG NUMBER(S): 50P1241 & 50P1242
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): 423 LBS.
5. NAMEPLATE DATA (hp, voltage, speed, etc.): 7.5 HP, 460V, 3 PH, 3600 RPM, 1.15 Service Factor
6. MANUFACTURER'S LOCAL REPRESENTATIVE: Cascade Machinery & Electric, Inc.
 - a. Name: _____ Telephone: 206-762-0500
 - b. Address: 4600 East Marginal Way South, PO Box 3575 Seattle, WA 98124

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

*NOTE: Maintenance and monitoring intervals should be shortened in severe service locations

Maintenance Operation Comments	Frequency*	Lubricant (If Applicable)
Bearing and Lubricant Condition: bearing temperatures, lubricant level, and vibration. Oil level should be mid-point of the bulls eye sight glass. Lubricant should be clear with no signs of frothing.	Routinely	★
Shaft seal condition: Mechanical seals should show no signs of leakage	Routinely	
Overall pump vibration, check bearing alignment	Routinely	
Pump discharge pressure – a gradual decrease in developed head can indicate the need for Impeller adjustment	Annually	
Check foundation and hold down bolts	Quarterly	

Oil change	Quarterly or after 2000 hrs. of operation, which ever comes first.	✦
Shaft alignment	Quarterly	
Pump flow rate	Annually	
Motor Amp Drain	Annually	
Vibration signature	Annually	
Motor Bearing Lubrication	15,700 hrs. of service	✧

8. LUBRICANT LIST

Reference Symbol	MFR (Name)	MFR (Name)	MFR (Name)	MFR (Name)	Or Equal
✦	ISO Grade VG 68 or equal	Chevron GTS Oil 68	Exxon Terrestic 68 or Nuto 68	Mobil DTE Heavy-Medium	Philips Mangus 315
✦	Shell Tellus Oil 68	Sunoco Sunvis 968	Amoco Industrial 68	Royal Purple – Synfilm GT VG 68	
✧	PolyRex EM Grease ESSO/EXXON				

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part No.	Description	Unit	Quantity	Unit Cost
21280-40-91	Impeller	Each	1	560.00
22049-4-1	Shaft Seal	Each	1	229.25
RK-3196S	Repair Kit	Each	1	137.75
K-3196S-8	Maintenance Kit	Each	1	32.50
Note: Identify parts provided by this Contract with two asterisks.				

MAINTENANCE SUMMARY FORM - 11312

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: STORMWATER RECYCLE PUMP 1, TYPE 811- 3 x 1.5-6

2. MANUFACTURER: GRISWOLD

3. EQUIPMENT/TAG NUMBER(S): 50P1541

4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) : 224 LBS.

5. NAMEPLATE DATA (hp, voltage, speed, etc.): 1 HP, 460V, 3 PH, 1800 RPM, 1.15 Service Factor

6. MANUFACTURER'S LOCAL REPRESENTATIVE: Cascade Machinery & Electric, Inc.

a. Name: _____ Telephone: 206-762-0500

b. Address: 4600 East Marginal Way South, PO Box 3575 Seattle, WA 98124

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

*NOTE: Maintenance and monitoring intervals should be shortened in severe service locations

Maintenance Operation Comments	Frequency*	Lubricant (If Applicable)
Bearing and Lubricant Condition: bearing temperatures, lubricant level, and vibration. Oil level should be mid-point of the bulls eye sight glass. Lubricant should be clear with no signs of frothing.	Routinely	★
Shaft seal condition: Mechanical seals should show no signs of leakage	Routinely	
Overall pump vibration, check bearing alignment	Routinely	
Pump discharge pressure – a gradual decrease in developed head can indicate the need for Impeller adjustment	Annually	
Check foundation and hold down bolts	Quarterly	

Oil change	Quarterly or after 2000 hrs. of operation, which ever comes first.	✦
Shaft alignment	Quarterly	
Pump flow rate	Annually	
Motor Amp Drain	Annually	
Vibration signature	Annually	
Motor Lubrication	20,000 hrs. of service	✧

8. LUBRICANT LIST

Reference Symbol	MFR (Name)	MFR (Name)	MFR (Name)	MFR (Name)	Or Equal
✦	ISO Grade VG 68 or equal	Chevron GTS Oil 68	Exxon Terrestic 68 or Nuto 68	Mobil DTE Heavy-Medium	Philips Mangus 315
✦	Shell Tellus Oil 68	Sunoco Sunvis 968	Amoco Industrial 68	Royal Purple – Synfilm GT VG 68	
✧	PolyRex EM Grease ESSO/EXXON				

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

[illegible]

MAINTENANCE SUMMARY FORM – 11315 (includes 1.03.B.6, Item 14)

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: DAF Feed Pumps No. 1 and 2
2. MANUFACTURER: NETZSCH- NEMO Pump, Model NM053SY01L07V
3. EQUIPMENT/TAG NUMBER(S) : 50P1101 and 50P1102
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS):
5. NAMEPLATE DATA (hp, voltage, speed, etc.): 3HP, 460V, 1800 rpm
6. MANUFACTURER'S LOCAL REPRESENTATIVE: Triangle Pump & Equipment, Inc.
 - a. Name: David Flack Telephone: 503-656-1473
 - b. Address: 14940 SE 82nd Drive, PO Box 950, Clackamas, OR 97015

7. MAINTENANCE REQUIREMENTS –

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. If training is required, it can be provided by the manufacturer/representative. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
Pumps – should be flushed or cleaned	As needed to remove buildup of medium deposits	N/A
Pump Lubrication	Quarterly	
Lubricating the Pin joint with SM-Pin Seals – It is advisable to change the oil and check the seals of the pin joints.	-When replacing worn joints -When disassembling the pump Amount: 1.22 fl oz. per joint	●
		With SM-pin joint seal (8235) of EDPM ■
Shaft Sealing through Single Mechanical Seal – If excessive leaks occur the spring tension and the seal surfaces should be checked,	Replace seal as necessary.	N/A
Motor Cleanliness – motor should be kept clean and free from dust, debris and oil. A jet of compressed air can be used to remove non-abrasive dust from the fan cover and	Monthly or as required by conditions	N/A

any accumulated grime from the fan and cooling fins. Terminal boxes should be cleaned and their terminals free from oxidation, in perfect mechanical condition and all unused space dust free.		
Motor Lubrication: Motor noise should be measured to check for unusual noises. A uniform hum is a sign that the bearing is running perfectly.	Periodically when motor is overhauled or disassembled	■ (Lithium based Grease)
V-Belt lining Inspection	Quarterly	N/A
V-Belts Drives, sheave alignment and bearing wear - Inspection	Quarterly	N/A

8. LUBRICANT LIST

[illegible]

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY - 1.03.B.6, Item 14

Part No.	Description	Unit	Quantity	Unit Cost
107171	3V x 850 Cogged Drive Belt	Each	2	18.87
NDB4825456	Coupling Rod	Each	1	418.25
NDB4958699	Rotor	Each	1	1387.05
Viton NDB4955093	Stator	Each	1	434.10
512279	Ring Retainer / Circlip	Each	2	5.00
NDB4825299	Conn. Rod Pin	Each	2	57.35
892841	Pin Retainer Sleeve	Each	1	80.00
862347	Pin Retainer Sleeve	Each	1	95.90
877421	Clamp Ring	Each	2	39.15
516041	O-ring	Each	1	12.35
517020	O-ring	Each	4	12.95
591718	O-ring	Each	1	5.00
Viton 879897	SM Seal	Each	2	93.85
PZ3756375	Pencil Anode	Each	4	3.25
BH5375	Brass Head	Each	4	3.20
Note: Identify parts provided by this Contract with two asterisks.				

MAINTENANCE SUMMARY FORM - 11318

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: AIR OPERATED DIAPHRAGM PUMP

2. MANUFACTURER: WILDEN , MODEL P400, 04-10973

3. EQUIPMENT/TAG NUMBER(S): 50P1510

4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): _____

5. NAMEPLATE DATA (hp, voltage, speed, etc.): 15 GPM, Total Dynamic Head 11ft., Suction Lift 20 ft., Air Consumption 10 CFM 18PSI,
Max shutoff pressure (ft.) 50

6. MANUFACTURER'S LOCAL REPRESENTATIVE: ARGO INTERNATIONAL, INC.

a. Name: Steve Telephone: 503-794-9686

b. Address: 13481 SE JOHNSON RD. PORTLAND, OR 97222

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
Inspect visible parts for wear	Quarterly	n/a
P400 is Pre-lubricated, requires no inline lubrication		n/a
Insure Proper Air Pressure	As need to control discharge flow rate.	n/a
Check pipes, valves & equipment	Annually	

8. LUBRICANT LIST –N/A

Reference Symbol	MFR (Name)	MFR (Name)	MFR (Name)	MFR (Name)	Or Equal
List symbols used in No. 7 above.	List equivalent lubricants, as distributed by each manufacturer for the specific use recommended.				
Not Applicable					

9. RECOMMENDED SPARE PARTS FOR OWNER’S INVENTORY

WILDEN OIL PUMP #P400-04-10973 - PRIMARY WEAR PARTS

Part No.	Description	Unit	Quantity	Unit Cost
04-2000-20-700	Pro-Flo Valve Assembly	Each	1	
04-3500-52-700	Gasket, Muffler	Each	1	
04-2600-52-700	Gasket, Air Valve	Each	1	
04-3880-99	Removable Pilot Sleeve Assembly	Each	1	
08-3210-55-225	Shaft Seal	Each	2	
04-3526-52	Gasket, Center Block, Pro-Flo	Each	2	
04-1010-55	Primary Diaphragm	Each	2	
04-1060-51	Backup Diaphragm	Each	2	
04-1080-55	Ball Valve	Each	4	
04-1125-01	Valve Seat	Each	4	
04-1205-55	Valve Seat O-Ring	Each	4	
Note: Identify parts provided by this Contract with two asterisks.				

MAINTENANCE SUMMARY FORM - 11374

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: ROTARY AIR BLOWER

2. MANUFACTURER: ROOTS M/N RO-32-U-RAI BLOWER

3. EQUIPMENT/TAG NUMBER(S): 50m1551

4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) : 500 LBS.

5. NAMEPLATE DATA (hp, voltage, speed, etc.): 7.5 HP, 460V, 3 PH, 3600 RPM

6. MANUFACTURER'S LOCAL REPRESENTATIVE: ROGERS MACHINERY COMPANY, INC.

a. Name: KEN WYNN Telephone: 206-763-2530

b. Address: 7800 FIFTH AVENUE SOUTH, SEATTLE, WA 98108

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
Lubrication of Blower Bearings and Gears	Check daily for 1 st month, Monthly thereafter	<input checked="" type="checkbox"/>
Check for increases or changes in vibration and noise	Check daily for 1 st month, Weekly thereafter	
Recording of operating temps and pressures	Weekly	
Motor Lubricant	Sealed, 3-5 years	
Belts and Drives	Quarterly	
Grease lubricated drive ends	Weekly	<input type="checkbox"/>

8. LUBRICANT LIST

[illegible]

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part No.	Description	Unit	Quantity	Unit Cost
651040RK	3" KIT (includes items below)	KIT		
63889021	GEAR ASSEMBLY 3 1/2" URAI T/	Each	1	
12957003	PLUG OPENING FOR 2.0474	Each	1	
62752021	GASKET, GRBX 3 1/2" URAI TS9	Each	2	
10987002	BRG, BALL	Each	3	
10222035	BRG, ROLLER	Each	1	
10319007	NUT, HEX ESNA 5/8-16	Each	2	
10005157	SEAL, LIP (VITON) 13/16" SF	Each	4	
11540003	SCR CAP HEXH NYL 1/4-20X	Each	4	
10005172	SEAL, LIP FOR GREASE LUBE	Each	1	
T20082001	SEAL, LIP FOR DSL	Each	1	
Note: Identify parts provided by this Contract with two asterisks.				

MAINTENANCE SUMMARY FORM

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: DISSOLVED AIR FLOATATION MECHANISM

2. MANUFACTURER: WESTECH ENGINEERING

3. EQUIPMENT/TAG NUMBER(S): DAF: M1121, RECIRC PUMP: 50P1135, AIR SATURATION PUMP: 50T1138

4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): _____

5. NAMEPLATE DATA (hp, voltage, speed, etc.):

- a. Recirc Pump – Baldor Motor, 15 HP, 3Ph/60Hz/230/460Volts-Winding, 360 RPM
- b. Skimmer Drive – Nord Unibase, Model SK32100-AZB-56C-71L/4, Reducer: 645:1, Output Speed = 2.7 rpm
Motor: 1/2 HP:, 1750 RPM, 230/460 VAC, 60 Hz
- c. Mixer Drive – Nord Unibase, Model SK2=0282N / AZB N56C, Reducer: 5.17:1, Output Speed = 338 rpm
Motor: 1/2 HP:, 1750 RPM, 230/460 VAC, 60 Hz
- d. Auger Drive – Sumitomo SM-Cyclo Model CNH-M03-6125DBY-AV-1003, Reducer: 1003:1,
Motor: 1/3 HP: 1750 RPM, 230/460 VAC, 60Hz

6. MANUFACTURER'S LOCAL REPRESENTATIVE: SELG & ASSOCIATES

- a. Name: Jon Telephone: 425-487-6059
- b. Address: 22224 Third Ave. SE Bothell, WA 98021

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
All bolts & nuts should be kept tight and alignments & adjustments maintained	Monthly	N/A
Examine all wearing parts	Weekly	N/A
Drain Tank & remove particulate deposits	Every 6 months	N/A
Grease pillow blocks	Monthly	⌘
Skimmer Drive gear box	after 20,000 service hours	●
Auger Drive gear box – initial oil change	after 500 hrs of operation	◇
Auger Drive gear box – subsequent oil changes	Every 6 months	◇
Mixer Drive gear box -	Every 10,000 service hours	▲
Circulation Pump – Grease	Every 2000 hours	⊙
Circulation Pump – initial oil change	After commissioning, change the oil after 100 service hours	■
Circulation Pump – subsequent oil changes	Every 6 months	■
Circulation Motor – Grease	Monthly	⌘

8. LUBRICANT LIST

Reference Symbol	MFR (Name)	MFR (Name)	MFR (Name)	MFR (Name)	Or Equal
●	Mobil Sch 630	Omala 220 HD	Isolube EP 220	Klubersynth EG 4-220	Tribol 1510/220
◇	Gulf Oil HD100 HD150	Exxon Oil Spartan EP-100, EP-150	Mobil Oil Mobilgear 627, 629	Shell Oil, Omala Oil 100, 150	BP Oil Enegol GR-XP 100, 150
▲	Mobilgear 630	Omala 220	Castrol 5EP	Kluberoil GEM 1-220	Energol GR-XP 220
⊙	Esso Unirex N3	SKF Light 3	Shell Limona LX1	Kluber Staburax NBU 8 EP	
■	Esso Teresso 46	Shell Tellus Oil 546	Mobil DTE Oil Medium	NESTE Paine 46	Kluber Cruconlan 46
⌘	Exxon Polyrex EM				

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part No.	Description	Unit	Quantity	Unit Cost
SEE ATTACHED SHEETS				
Note: Identify parts provided by this Contract with two asterisks.				



3625 South West Temple, PO Box 65068, Salt Lake City, UT 84165-006

Phone (801) 265-1000 / Fax (801) 265-1080

24 Hour Emergency Assistance (801) 267-4220 (Pager)

E-Mail: parts@westech-inc.com

Recommended Spare Parts List

Westech Job No.: 20212A

Date Prepared: February 7, 2008

Prepared by: WMOORE

Proposal Valid for: 90 days

FOB Ship Pt. w/Frt: Prepay & Add

Payment Terms: Net 30 Days

In order to increase the life of your equipment, and avoid costly downtime, Westech recommends that you maintain your equipment at regular intervals. To do this, Westech recommends, at a minimum, that you have the below mentioned items on hand at all times.

Long lead items that could significantly minimize downtime as well as normal maintenance and wear items are included in this list.

Item Number	Drawing Number	Item Description	Recommended Quantity	Unit+ Price
Parts List No: 8642				
141	H2013B-3	OVERLOAD HEATER	1.00	43.65 each
203	RH3B-UAC120V	RELAY, 3PDT, 120V	5.00	19.93 each
206	RH1B-UAC120V	RELAY, SPDT, 120V	10.00	10.30 each
211	FNQ-R-1	TIME DELAY FUSE, 1 AMP	3.00	13.18 each
215	FNQ-R-4	TIME DELAY FUSE, 4 AMP	2.00	14.18 each
219	FNQ-R-10	TIME DELAY FUSE, 10 AMP	1.00	14.18 each
220	FNQ-R-2	TIME DELAY FUSE, 2 AMP	1.00	13.45 each
227	2856689	SURGE ARRESTER, PLUG/BASE, 1PH, 480VAC	1.00	711.65 each
238	10250T221N	PILOT LIGHT, PTT, 120V	9.00	113.15 each
239	10250TC14N	GLASS LENS, PTT, GREEN	4.00	10.85 each
240	10250TC15N	GLASS LENS, PTT, AMBER	5.00	10.63 each
242	BF3126-OCW-006B	LIGHT - LED WHITE CLUSTER	9.00	48.80 each
306	10250T333	POTENTIOMETER, W/KNOB	2.00	170.65 each
** 418	10250T221N	PILOT LIGHT, PTT, 120V	2.00	113.15 each
** 419	10250TC14N	GLASS LENS, PTT, GREEN	1.00	10.85 each
** 420	10250TC15N	GLASS LENS, PTT, AMBER	1.00	10.63 each
** 421	BF3126-OCW-006B	LIGHT - LED WHITE CLUSTER	9.00	48.80 each
** 426	10250T333	POTENTIOMETER, W/KNOB	1.00	170.65 each
** 430	FNQ-R-1	TIME DELAY FUSE, 1 AMP	3.00	13.18 each
** 431	FNQ-R-4	TIME DELAY FUSE, 4 AMP	2.00	14.18 each
** 432	FNQ-R-10	TIME DELAY FUSE, 10 AMP	1.00	14.18 each
** 433	FNQ-R-2	TIME DELAY FUSE, 2 AMP	2.00	13.45 each

+ Please call, for current price and availability, if prepared more than 90 days previous, or if unit price is not printed.



RECTANGULAR DISSOLVED AIR FLOTATION UNIT SUBMITTAL

DAF UNIT

**DAFR6S
Model 618-1**

Recommended Spare Parts

QTY	DESCRIPTION
12	LINK - 316SS, 6 INCH PITCH, FLIGHT, CHAIN
2	BRACKET - 316SS, FLIGHT, CHAIN ATTACHMENT
4	STRIP - 6' DAF, VITON, FLIGHT



RECTANGULAR DISSOLVED AIR FLOTATION UNIT SUBMITTAL

AERATION UNIT

**Micro-Aire System
Model 1000-1-75**

Recommended Spare Parts

QTY	DESCRIPTION
1	ASSY, 10-100 SCFH FLOWMETER AND FLOW RANGE INDICATOR STRIP
1	PRESSURE GAGE, 160 PSI GLYCERINE FILLED WITH DIAPHRAGM ISOLATOR
1	ASSEMBLY, CACHE ACME VALVE, CHECK VALVE, FILTER REGULATOR
1	COUPLING SLEEVE, 7JE

RECOMMENDED SPARE PARTS – SULZER RECIRC PUMP

Part No.	Description	Qty.
171.01	Diffuser	1
210.01	Shaft	1
230.01	Impeller	1
320.01	Antifriction bearing	1
400	Gaskets	2
412	O-Rings	2
413.01	V-Rings	2
433.01	Mechanical seal	1
435.01	Static seal	1
475.01	Thrust ring	1
524.01	Shaft wearing sleeve	1
550.01	Plate	2
604.01	Impeller	1
923.01	Bearing nut	1
931.01	Lockwasher	1
940.01	Key	1

MAINTENANCE SUMMARY FORM -16260

PROJECT: Wyckoff Replace Groundwater Treatment Plant CONTRACT NO.: W912DW-06-R-0014

1. EQUIPMENT ITEM: Low Voltage Adjustable Frequency Drives
2. MANUFACTURER: ABB Ach 550-PC-03A3-4, ABB ACH550-PC-06A9-4, ABB ACH550-PC-015A-4
3. EQUIPMENT/TAG NUMBER(S): 50AFD1391, 50AFD1392, 50AFD1101, 50AFD1102, 50AFD1241, 50AFD1242
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS): N/A
5. NAMEPLATE DATA (hp, voltage, speed, etc.): 1,3, 10 HP, 460V, 3PH, Variable Speed. 3,4,8, 14 FLA, 15,15, 30 AMP Fuses
6. MANUFACTURER'S LOCAL REPRESENTATIVE: Washington Air Reps
 - a. Name: Christian Vornheder Telephone: 425-562-1150
 - b. Address: 3290 16th Pl. SE. Bellevue, WA 98007

7. MAINTENANCE REQUIREMENTS

Qualifications and Training of Personnel: All personnel responsible for service, maintenance, inspection, installation and operation must have the appropriate training. Responsibility and supervision of personnel must be strictly enforced by the end user. Furthermore, it is the responsibility of the end user to ensure that personnel fully understand the operating instructions.

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
Heatsink temperature check and cleaning, O&M pg. 283 of 332	Depends on dustiness of environment, every 6-12 months	
Main cooling fan replacement, O&M pg. 284 of 332	Every five years	
Internal enclosure cooling fan replacement (IP 54/UL Type 12 units), O&M pg. 285 of 332	Every three years	
Capacitor change (Frame sizes R5 and R6) O&M pg. 285 of 332	Every ten years	
Replace battery in the Assistant control panel, O&M pg. 286 of 332	Every ten years	

8. LUBRICANT LIST

Reference Symbol	MFR (Name)	MFR (Name)	MFR (Name)	MFR (Name)	Or Equal
N/A					

9. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

[illegible]